

Draft Development Consent Order (DCO)

Summary

The Draft DCO for the Proposed Development was considered at Issue Specific Hearings 1 and 2 on 18th and 20th January 2023. Several other projects were mentioned which have a bearing on this Examination and on the proposed Draft DCO, leading to a number of alternative drafting proposals.

The possibility of an alternative grid connection point has also been raised. This in turn indicates a need for an alternative version of the Draft DCO to accommodate that particular outcome.

The available grid capacity also suggests the need for two alternative versions of the Draft DCO.

1. Norfolk Vanguard and Boreas

In September 2022 these two projects removed their capacity limits without material amendment of their respective DCOs. The new wording simply refers to a gross electrical output capacity of more than 100 MW. It is not clear at this time what would now prevent the applicant from changing the characteristics of the onshore substations, either by increasing the size or by introducing large scale battery storage, without requesting any further material or non-material amendment of the DCOs.

2. Hornsea Three

The Hornsea Three DCO was approved on the basis of a gross electrical output (measured offshore) of 2.4GW. The published capacity of the project as described in some trade journals is now 2.8GW.

The Hornsea Three DCO, however, does not currently specify a capacity limit but merely refers to a gross electrical output capacity of more than 100 MW.

It has previously been understood that NPS EN-1, the grid connection code, and Ofgem regulations all require that a radial connection shall have sufficient capacity to accommodate the whole of the gross electrical output of an offshore wind project. It is not clear at this time what would prevent the Hornsea Three developer from changing the characteristics of the onshore substation, for example by increasing its size, to meet this general expectation either with or without a material amendment.

Large scale battery storage was not considered during the Hornsea Three examination and is not described anywhere within the DCO. Despite this, approximately one half of the land identified in the Hornsea Three examination library as being required for the onshore substation and landscaping mitigations is now allocated for industrial scale battery storage, with an average height of 6.05m.

This raises important issues concerning the use of compulsory acquisition powers, and subsequent vesting, for a purpose not within the scope of the project as described in Schedule 1 of the DCO, and under circumstances where no compelling public interest has been shown to exist.

3. Hornsea Four

The Examination for Hornsea Four closed in August 2022, and the statutory deadline for a decision has just been extended from 22nd February to 12th July 2023. In this case, however, the Examining Authority required that large scale battery storage should be explicitly identified in the Draft DCO and sought additional information on this issue during the examination. As a result, the Hornsea Four Draft DCO now includes, in Schedule 1 Work No. 7 (b), an 'energy balancing infrastructure' – a term which, in reality, represents the addition of potentially very large scale battery storage.

4. Dudgeon and Sheringham Shoal Extensions

(a) Gross electrical output

Taking into account the changes made to the projects mentioned above, together with the discussion at Issue Specific Hearings 1 and 2, it appears that the Applicant could, post DCO consent, increase the electrical output of the Proposed Development without the need for a material amendment.

This could be accomplished, for example, by building out the full extent of both the Dudgeon North and Dudgeon South extension areas, thereby adding a potential further 400 MW. It is not clear what would then prevent the applicant from increasing the size of the onshore substation to accommodate the whole of the gross electrical output of the project as is usual for a radial grid connection.

Leaving open this degree of flexibility would be inconsistent with the requirement of NPS EN-1 that the applicant should ensure sufficient grid capacity to accommodate the output of the project.

This is particularly relevant for so long as the grid connection point for the Proposed Development is presumed to be shared with Hornsea Three at Norwich Main, where the onward grid transmission capacity from Norwich Main towards Bramford is, according to National Grid, currently limited to two redundant circuits of 1500 MW each, and the output from Hornsea Three is now 2800 MW.

For the case where the grid connection point is still assumed to be at Norwich Main, the Draft DCO should therefore revert to the previous practice of specifying the gross electrical export capacity of the project in Schedule 1, Work No. 1. Following the example of previous projects, this could read:

“with an electrical export capacity of up to 720 MW at the point of connection to the offshore electrical platform(s) referred to at Work No. 3”

This would replace the existing wording in the Draft DCO, which currently refers only to a ‘gross electrical output capacity of more than 100 MW’ for each of the two proposed extension projects.

(b) Large scale battery storage

The potential introduction of large scale battery storage appears in the Scoping Report in document EN010109-000316, p30, which states: ‘the onshore substation may incorporate energy balancing / storage infrastructure, such as a battery.’ The same document also says, at para 133 on page 42:

“133. Energy and grid balancing equipment is becoming increasingly widespread to effectively and cost efficiently balance the supply and demand of electricity within the electrical transmission network as well as offer grid services and thus increase the overall reliability of the system. Since this is a rapidly evolving field a range of technologies are under development and will be considered and assessed within the Environmental Statement. The system could be housed in single or multiple building(s), several containers, in an open yard or a combination of the above.”

As in the case of Hornsea Three and Hornsea Four, this wording raises important issues concerning the use of compulsory acquisition powers and subsequent vesting for a purpose not within the scope of the project as described in Schedule 1 of the Draft DCO, and where no compelling public interest has been shown to exist. It also adds to the difficulties of assessing the cumulative onshore impacts.

There are also very specific additional and unregulated risks arising from the potential for thermal runaway and the use of large volumes of cooling water. This in turn may compromise the proposed scheme of surface water drainage by infiltration, due to contamination of the groundwater. There is also a potential risk from harmful gases produced during thermal runaway and the water cooling process, which may prevent access to the site for a considerable period of time.

Given the Hornsea Three experience, this option should be explicitly ruled out, or at least, explicitly identified in the Draft DCO and the risks properly quantified and assessed in this Examination.

5. Scenarios for the Proposed Development

The need for renewable energy is prescribed by the National Policy Statements. Although the NSIP planning procedure does not necessarily require the most reasonable alternative to be adopted, this must now be viewed alongside the more recent requirements of climate change legislation.

The Draft DCO currently accommodates a large number of alternatives apparently designed to suit the administrative practices of BEIS, Ofgem and National Grid. This is no longer acceptable, and only the single phase, fully integrated option should be permitted to go forward in the Draft DCO.

Furthermore, it now appears from National Grid publications that the demand for renewable energy at Norwich Main can be fully satisfied by the existing Dudgeon and Sheringham Shoal wind farms, and that all new offshore wind generation, including Norfolk Vanguard, Boreas, and Hornsea Three, must leave the region if it is to be used to reduce emissions and combat climate change.

It is also important to note that, due to offshore considerations, the consenting process for Hornsea Three is not yet complete, and that it does not at this time appear to have an onshore grid connection with sufficient onward transmission capacity to accommodate the whole of its proposed output.

Two scenarios only, therefore, should be carried forward in alternative versions of the Draft DCO.

Scenario A: The Proposed Development is connected at Norwich Main

In the event that Hornsea Three does not proceed with a grid connection at Norwich Main, the Draft DCO would appear to be acceptable, subject to the inclusion of the gross electrical export capacity, a single phase, fully integrated onshore construction schedule, and due process of the examination.

Under these conditions it would appear that the onward grid transmission capacity will be sufficient to accommodate the output of the Proposed Development and that battery storage can be excluded.

Scenario B: The Proposed Development is connected at Walpole

In the event that Hornsea Three proceeds with a grid connection at Norwich Main, it is difficult to see how the Proposed Development can be recommended for approval unless an alternative grid connection at Walpole is adopted to secure the aims of the project. The ExA may wish to consider:

(a) Approval of the offshore Works Nos. 1, 2, 3, 4 and 6 (part only), subject to the inclusion of the gross electrical export capacity, a single phase and fully integrated construction schedule, and due process of the examination.

(b) Refusal of the onshore Works Nos. 5, 6 (part only), 7 to 14, and 15 to 22 as currently drafted. A Draft DCO which does not include these items would allow a positive recommendation to be made.

Refusal

For any other permutation of grid connection outcomes, it would appear that the planning balance cannot be properly determined and that no viable Draft DCO can be recommended for approval.

6. Other projects

Until very recently, the proposed Amint UK–Denmark interconnector also held a grid connection agreement at Norwich Main. This has now been moved to a new substation, to be constructed with a supporting onshore pylon route, at Mablethorpe in Lincolnshire. Similarly, the Round 4 lease in the Hornsea zone has also been assigned a grid connection agreement at Mablethorpe. The above discussion is predicated on the assumption that these two existing grid connection agreements are not moved back to Norwich Main after the present Examination closes, or at any other future date.